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Human Enhancement and Personal Identity

1. Introduction

Human enhancement, also called human augmentation, is an emerging field within medicine and bioengineering that aims to develop technologies and techniques for overcoming current limitations of human cognitive and physical abilities.¹ Technologies developed in this field are called *human enhancement technologies* (HETs). HETs rely on advances in genetic engineering, pharmacology, bioengineering, cybernetics, and nanotechnology. In these fields, it is becoming possible to develop techniques that improve human functions beyond a normal range. The envisioned applications are limitless, and include the enhancement of human traits like muscular strength, endurance, vision, intelligence, mood and personality.

The possibility of human enhancement requires a rethinking of the aims of medicine. The primary aim of medicine has always been the treatment of illness and disability. That is, medicine has traditionally been *therapeutic*: it has been concerned with restoring impaired human functions to a state of normality or health. Human enhancement aims to bring improvements to the human condition that move beyond a state of mere health. Part of the contemporary debate on human enhancement therefore concerns the question whether the traditional aims of medicine should be expanded to include human enhancement as one of its aims.

Human enhancement has been advocated most forcefully by self-identified *transhumanists*.² Transhumanism is an international movement with the explicit aim of supporting human enhancement technology to improve human life. Transhumanists, like Nick Bostrom and Max More, believe that HETs can be used to improve human life and hold that there are no moral imperatives by which embargos on the development and use of HETs can be justified. Critics of human enhancement, like Francis Fukuyama and Leon Kass, oppose tinkering with human nature for the purpose of enhancement.³ Human enhancement has been opposed for a variety of reasons, including claims that it is unnatural, undermines human dignity, erodes human equality, and can do bodily and psychological harm.

One of the issues in the debate on human enhancement has been its potential impact on *personal identity*.⁴ Personal identity is here understood as the collection of attributes that make someone a unique person, especially as understood by themselves.⁵ Human enhancement can be expected to affect personal identity because it involves the modification of human minds and bodies and equips humans with supernormal abilities. These new abilities may change the way that persons look and behave, and may change the way they experience the world and themselves. Humans may even be modified to the extent that the resulting organism is no longer fully identifiable as a member of *Homo sapiens*, and has become a transhuman or posthuman lifeform, which will lead to even more drastic changes in personal identity.

In what follows, I will analyze potential and actual implications of human enhancement for personal identity, and I will assess the moral importance of these implications for healthcare and health policy. Before these implications can be studied, it

first has to be discussed more precisely what human enhancement is and what different kinds there are. This will be done in the next section.

2. Types of Enhancements and Enhancement Technologies

A brain prosthesis is likely to have different consequences for personal identity than a breast implant. To adequately analyze the consequences of human enhancement for personal identity, we therefore need to distinguish between different kinds of enhancements, to enable us to explore different effects on identity. Enhancements are improvements of *human traits*, which include mental and physical attributes and abilities and behavioral dispositions. The impact of an enhancement on identity may vary with (1) the type of trait that is modified, (2) the means by which it is modified, and (3) the extent or degree to which it is modified. I will now discuss the different types of enhancements that can be distinguished along these lines.

Types of enhancement by trait

A basic distinction can be made between *bodily* and *mental* or *psychological enhancements*, where the former include improvements of the body, and the latter improvements of the mind and behavior.⁶ Bodily enhancements can be further divided into physical and cosmetic enhancements, and mental enhancements into cognitive, affective and personality enhancements.⁷

Physical enhancements are enhancements of human physical capacities, which are capacities for physical action and for the maintenance of a good physical condition. They include capacities like strength, speed, agility, endurance, precision, and resistance against heat and cold. *Cognitive enhancements* are enhancements of human perceptual and cognitive capacities. They enhance human abilities for sensory perception, memory, decision-making, thought and imagination. *Affective and personality enhancements* are enhancements of mood, personality traits, and (social) behavioral tendencies, such as tendencies to have positive moods, to have greater confidence, or to be more sympathetic.⁸ *Cosmetic enhancements*, finally, are aesthetic enhancements of features of the body. Existing cosmetic enhancements include a variety of cosmetic surgery procedures, like eyelid and breast surgery, and focus on visual beauty. They could conceivably also be targeted at nonvisual features like voice and smell.

Techniques for enhancement

There are three major techniques for human enhancement: *prosthesis* (the fitting of prosthetic devices and tissues), *pharmacological treatment* (the use of drugs to improve biological systems), and *genetic engineering*. The corresponding enhancements may be termed prosthetic, chemical and genetic.⁹ *Prosthetic enhancements* are enhancements that result from the fitting of prostheses to the human body. A prosthesis is an artificial body part. Artificial parts can be used to either replace (parts of) human organs or be fitted next to organs to improve their function.¹⁰ Very few prostheses that currently exist can be understood as genuine enhancements, since most of them are not capable of

performing better than normally functioning organs. This may change, however, because of advances in neuroprosthetics and robotics and in the growth of bioartificial organs.

Chemical enhancements are chemical modifications of biological organs or processes that yield superior functioning. Well-known are performance-enhancing drugs in sports (“doping”), of which a wide range already exists, including hormonal substances like anabolic steroids and human growth hormone. Similarly, virility drugs like Viagra, used to treat erectile dysfunction, are be used to enhance sexual performance in normally functioning individuals. An important class of chemical enhancements is located within the realm of *psychoactive drugs*, which are chemicals that temporarily or permanently alter brain function, with resulting changes in perception, cognition, mood, personality traits, or behavior. Some of these psychoactive drugs can be used for enhancement, such as *nootropics*, or “smart drugs”, which are psychoactive drugs that boost cognitive abilities, such as memory, alertness, verbal facility, and creative thought.

Genetic enhancements are enhancements brought about through genetic engineering. Genetic engineering, or genetic modification, involves the modification of genomes (DNA) in cells, usually by the introduction of foreign DNA. So far, human genetic enhancement is still largely science fiction, but it may not be far away. It is generally agreed that genetic enhancements are best achieved through germ-line genetic modification. In such a process, the genome of germ cells would be manipulated to include “superior” genes for certain traits. In this way, it would be possible to create “designer babies”.¹¹

An additional theoretical possibility is the use of animal DNA rather than human DNA in human genetic engineering. The resulting humans would be *transgenic*,

meaning that they carry DNA from another species. Transgenic animals already exist with human DNA, like transgenic chickens that are able to synthesize human proteins in their eggs. Another possibility is the creation of *human-animal chimeras*. Chimeras are organisms made out of the cells of two or more different zygotes. A human-animal chimera is an interspecies chimera from a human and an animal zygote. Chimeras have already been brought into existence, including a combination of a sheep and a goat (“geep”), a chicken with a quail’s brain, and a human-rabbit chimera that was not allowed to grow beyond an embryonal stage.

Intra-normal and supernormal enhancements

Enhancements were defined as non-therapeutic modifications of traits that bring them beyond a normal condition. But “normal” is ambiguous between normal for the individual and normal for the species. We can therefore distinguish between *intra-normal enhancements*, which are improvements of traits that remain within the normal range for human beings and *supernormal enhancements*, which are improvements beyond the normal human range and additions of qualitatively new traits.¹²

Within the class of supernormal enhancements a further distinction is warranted between traits that are merely exceptional for humans, and traits that have a value or quality beyond the known human range. Traits in the latter category are not merely supernormal, they are *superhuman*. For example, a mere supernormal enhancement of strength may help a weightlifter lift 300 or 400 kilograms, where the world record is 472. A superhuman enhancement, in contrast, may help him lift 600 kg.

3. Human Enhancement and Personal Identity

Having explored the notion of enhancement and the different kinds that exist, let us now turn to the notion of personal identity. The notion of identity, when applied to persons, is customarily used to designate those qualities that jointly define a person as a unique individual, distinct from others.¹³ Any persistent quality that one has can be part of one's identity. Very diverse qualities, like having freckles, being stubborn, believing in free will, being the survivor of an earthquake and being a German-American can, to a greater or lesser degree, help define one's uniqueness and therefore help define one's identity.

Social scientists normally define identity not as an objective condition of persons, but as a subjective or attributed condition. Identities, in this sense, are assemblies of attributed qualities by which persons are identified and characterized as unique individuals, either by themselves or by others. Identity attributed by a person to him- or herself is called *self-identity*. Self-identity is hence the way in which a person or *self* reflexively understands him- or herself. *Third-person identities* are identities attributed to a person by others. Self-identity and third-person identities often differ. For example, it may be part of someone's self-identity that she is obese, whereas most others perceive her as thin. The focus of research on identity in the social and behavioral sciences and humanities has mostly been on self-identity.

In the psychological literature on self-identity, a person's self-identity is often analyzed as constituted by a *self-concept*.¹⁴ A self-concept is a relatively stable conceptual structure that contains beliefs about oneself, in particular about one's enduring attributes. The psychological function of the self-concept is, according to an influential

study by Epstein, twofold: it has an integrative and a hedonic function.¹⁵ Its *integrative* function is that of aiding in the organization and assimilation of experience, with special emphasis on the demarcation and categorization of experiences of oneself. The *hedonic* function can be described, in contemporary terminology, as that of enhancing *self-esteem*; it involves the comparative evaluation of one's own attributes. Such self-evaluations play a significant role in determining one's subsequent behavior, attitudes, and intentions.

To perform its integrative and hedonic functions, the self-concept has to succeed in two tasks: It has to draw a boundary between the self and its environment, and it has to discern attributes in the thus delineated self. The first process, which is believed to occur in infancy, has been called the formation of the *existential self*, or the self as subject.¹⁶ The second process, which is thought to continue throughout one's lifespan, is called the formation of the *categorical self*, or the self as object.¹⁷ Individuals begin defining themselves within systems of categories from an early age on, and keep refining and changing these definitions as they grow older.

Society has a major role in the formation of the categorical self. Psychological research shows that the self-categorizations of individuals strongly correlate with the ways in which they expect to be judged by others.¹⁸ Although self-identity is hence shaped by society, it does not follow that self-identity reduces to *social identity*. Social identity is identity derived from group membership, and self-attributed social identity is the way in which one defines oneself as belonging to particular social groups.¹⁹ Many personal attributes, especially physical and psychological attributes like being tall and being melancholy, are not, by this definition, part of one's social identity, as individuals

with these traits are not, or hardly, distinguishable as separate social groups with their own historically formed identity. The notion of social identity is therefore sometimes contrasted with that of *psychological identity*, which is based on self-categorizations that include idiosyncratic attributes of individuals, especially those that relate to their physical and psychological traits.

In most attempts to give a more precise analysis of its structure, the self-concept is analyzed as consisting of a system of *self-schemas*, which are cognitive and affective structures that contain beliefs and feelings about the self along some dimension, such as bodily appearance, character traits, or group membership. These self-schema's are stored in long-term memory, but may be activated to frame and categorize self-experiences and guide thought and behavior in particular instances. Persons have self-schemas about their body;²⁰ *character traits*;²¹ *values and beliefs*;²² *abilities*;²³ *social identity*;²⁴ and *personal history*.²⁵

The moral and social importance of self-identity rests in the fact that it determines how people feel about themselves, and is a strong determinant of people's intentions, attitudes and behaviors. A poorly developed self-concept could either bring about low self-esteem, resulting in self-depreciation or even suicide, or superiority complexes that result in unrealistically high expectations in life and poor treatment of others. Similarly, attributed third-person identities determine in large part how one is treated by others, and poorly formed third-person identities could make one the subject of discrimination and poor treatment. The way that personal identities are defined in a society is therefore of major importance to it and its individuals. Human enhancement is likely to lead to major

changes in personal identities, and it is therefore important to assess what changes are likely to occur and whether these changes are desirable for the individual and for society.

On a naïve transhumanist analysis, changes in personal identity resulting from human enhancement can only be for the good. Human enhancement makes for better people, who then have more self-esteem and are held in higher esteem by others, and all these individual benefits add up to a benefit for society as a whole. Over the next three sections, I will argue that reality is more complex, and that changes in personal identities can also lead to significant harms. In the next section, I will analyze how human enhancement is likely to impact self-conceptions of agency and achievement, and therefore self-esteem. Next, I will analyze how the large-scale use of certain human enhancements may change existing conceptions of normality and how this may impact the social status and self-esteem of the unenhanced. Third, I will analyze how the introduction of superhuman traits and traits that cross species boundaries would produce new social identities and could lead to new class systems. In a concluding section, I will discuss implications of these three analyses for healthcare and health policy.

4. Personal History and Identity

An important part of self-identity is constituted by an understanding of one's personal history, including ontogenetic history, which is account of how one became to be the person one is. *Ontogenetic identity* may be defined as that part of one's self-concept that recounts one's ontogenetic history. Ontogenetic identity is undoubtedly an important constituent of self-identity, because it is explanatory of who one is. The fundamental

question “Who am I?” is answered in part through an answer to the question “Where did I come from?” Ontogenetic identity provides reasons or causes why one has the traits one has and why one finds oneself in the situation one is in.

Human enhancement affects ontogenetic identity by adding an essentially new type of explanation for human traits. People tend to explain their own traits by reference to either nature or nurture, or a combination of the two. In *nature-based explanations*, traits are held to have been predetermined at birth, and to be part of one’s nature since birth. These explanations can be secular, referring to the forces of “nature” or to genetic evolutionary forces, or religious, referring to a god or creator. Traits like height, eye color, intelligence, and friendliness can be explained by saying “I was born that way,” “they are in my genes,” or “It is God’s gift”.

In *nurture-based explanations*, human traits are explained as resulting from nurture: influences after birth. Such influences may be external or self-produced. External influences are circumstances beyond one’s control that cause changes in oneself. E.g., “My mother made me into a sceptical person,” “The sun has made my skin wrinkled”. Self-produced influences include personal choices and efforts: “I have worked hard to make my body strong and versatile,” “I have cultivated an optimistic outlook in life”. Self-produced influences, to the extent that they lead to improvement, are typically the result of individual effort aimed at self-improvement.

Human enhancement changes this existing order by enabling the artificial modification of traits that were once held to be fixed by nature and by enabling the enhancement of traits through relatively effortless technological intervention that could once only be enhanced through individual effort over a sustained period of time. Let us

now consider the implications of these two changes in the existing order. First, the engineering of human traits that are traditionally held to be part of pre-given “nature” will necessarily bring it about that these humans will not fully conceive of themselves as either a “natural human being” or as a “creation of God”. They will realize that part of their nature is engineered by human beings and is, in effect, a human artifact.

Such a realization would be unwelcome if they subscribe to ideals of naturalness or to religious beliefs according to which such engineering of their nature is undesirable. However, many people may not have such beliefs, and may be happy to improve themselves. Persons may then come to conceive of themselves as partially their own creation. This may be experienced by them as liberatory, as Donna Haraway has argued in relation to cyborgs.²⁶ Yet, informed consent cannot always be assumed in relation to enhancement. Enhancements may also be selected by others, for instance at birth or at a young age by parents. In such cases, persons will come to understand themselves as partially engineered by others, with purposes that were not freely chosen by themselves.²⁷ For instance, persons may find out that they are tall because their parents wanted them to become a basketball player, or that they are intelligent and diligent because their parents wanted them to go to law school. Such revelations could trigger identity crises and strain social relationships.

They could also give persons the idea that they are not autonomous individuals but persons whose identity has been preprogrammed by others. Such an idea may result from the realization that one’s traits are not given by nature or God but have been carefully selected by others to fulfill their ends. The selection of enhancements by others may especially undermine images of oneself as an agent with free will if the

enhancements are in the realm of mood and personality. Imagine a future in which a child has been carefully designed through genetic and chemical engineering to have certain personality traits that her parents found desirable. Her personality has been enhanced so that she has a tendency to be optimistic, friendly, tolerant, and ambitious. Her kind actions or her ambitious choices are then likely to be interpreted by herself and others as not wholly free, because conditioned by her parent's engineering of her personality. In other words, her identity may not be that of a free agent. Yet in Western culture since the enlightenment, conceptions of the self-worth of human beings have been strongly connected in to their being free-willed, autonomous agents. A realization that one is not a wholly free agent is therefore likely to undermine her self-esteem and make it more difficult for her to function in society.

A second change in existing orders comes from enhancements that substitute for individual effort. There is a widely held belief in Western societies that self-improvement and human excellence strongly depend on individual effort and require prolonged training, discipline and self-control. Human enhancement provides technological procedures to improve traits without the necessity of individual effort. To many, such procedures would be appealing. Why, for example, train for years to become a successful athlete if human enhancements could give one the same abilities immediately? Human enhancement could therefore seriously alter the conventional relation between effort, self-improvement and achievement, as is already happening in sports due to the use of doping. Yet, the relation between effort and achievement is very important in many religions and ideologies, from Buddhism to Christianity and from

socialism to liberalism. These ideologies all emphasize the central role of effort and training in achievement and self-actualization, and define human identity in terms of it.

If human traits and achievements become less dependent on individual effort, the whole current system for assigning praise and reward in society will be undermined, along with associated notions of self-esteem. As Michael Sandel has argued, when one's traits are not there by one's own making, one's achievements will not receive the same amount of admiration.²⁸ When a javelin thrower excels in his sport, the admiration and respect he gains from others are not just directed at successful individual throws. They are also directed at his achievement in training his body so that he is able to make successful throws. When a javelin thrower excels because of human enhancement, then this admiration will largely disappear. Perhaps admiration will go instead to the doctors or engineers who enhanced the javelin thrower. The javelin thrower's self-identity is likely to be similarly affected. He will not see his enhanced body, and his actions performed with it, as fully his own achievement.

5. Commodification and Changing Standards of Normality

Human enhancement does not only affect ontogenetic identity, it also affects bodily identity (how we perceive our bodies) and social identity (how we perceive ourselves in relation to others). In this section, it will be explored how the use of HETs is likely to affect bodily and social identity in contemporary Western societies. Contemporary Western societies are nearly all characterized by a market economy, a consumer culture, and a liberal system of government. These features of societies strongly determine the

way in which enhancements are made available and the way in which they will be used. This, in turn, will influence the impact they have on identity.

The centrality of the market in contemporary societies means that enhancements are likely to be developed and advertised by commercial firms. This is already true for existing enhancements like cosmetic surgery and performance-enhancing drugs. In such societies, enhancements will have the status of *consumer goods*: goods that satisfy human wants through their consumption or use. People will buy them if they can afford them and have been convinced that they will improve their lives. In a consumer culture, products are believed to improve one's life if they satisfy wants or improve one's status. Advertising is the primary medium used by producers to convince consumers that products will indeed satisfy their wants and improve their status. The wants of consumers are to an extent manufactured through such advertising, and through the culture as a whole, which defines certain things as desirable and worth having.²⁹

Another feature of most contemporary societies is that they have a mostly liberal system of government, meaning that they emphasize individual freedom, including free enterprise, and do not advocate or endorse a particular conception of the good for its citizens.³⁰ That is, in their regulation of human activity, including commerce, governments usually do not prohibit or require activities, unless this is necessary to prevent agents from doing harm to others. A liberal attitude towards enhancements would require that they are safe for the user (so that producers do not cause harm to users) and that they are not likely to do harm to others when used properly. Further regulation is likely to be limited, since further regulation would mean that the state privileges a particular conception of the good (e.g., a moral or religious one) above other

conceptions that also have their place in society. This liberal attitude towards enhancement is already visible in the regulation of cosmetic surgery and performance enhancing drugs, where restrictions on access, if any, are usually legitimized by health and safety concerns, and not by a moral or religious conception of what is good for people.

In modern societies, then, enhancements will be goods that can be bought and sold. In other words, they will be *commodities*. Consumers can *buy* height, intelligence, beauty, and a pleasant personality, and companies *sell* such products. Unavoidably, the availability of commodified enhancements will lead to a commodification of human traits, meaning that traits themselves are seen as purchasable and replaceable objects. The way in which people conceptualize and evaluate human traits will be influenced by the fact that a monetary value can be put on them, and that some traits are affordable, whereas others are not. Other qualities of traits, such as personal meanings they may carry, may become less prominent because of their commodification.

When traits are commodified, they change their status from a *natural good*, a good that is a fixed part of one's human nature, to a *social good*, a good that can be bought, sold and redistributed. As a consequence, they will no longer be markers of someone's fixed human nature. Rather, they will become markers of status and wealth that signify economic success, social superiority and good taste.

If demand is great enough, and prices are kept low enough, then some enhancements may be possessed by most members of the middle class and thus become the norm in society. The rise of cosmetic surgery shows that such a scenario is not unthinkable. In South Korea, it is now estimated that more than 50% of women in their

20s have had some form of cosmetic surgery.³¹ Usually, this is facial surgery, such as eyelid surgery, for making the face look more beautiful and “Western”. When enhancements become the norm for a trait, normality is redefined, and unenhanced traits become inferior rather than normal, and may come to mark either lower status, social and economic failure, or nonconformity.

This tendency may be even further exacerbated through advertising. The strategy that is often followed in the marketing of products is not only to project images of happiness and superiority in relation to using a product, but also to project images of unhappiness, inadequacy and inferiority for not using the product. Acquiring the product then becomes a means of overcoming one’s own inadequacy and unhappiness. This strategy is clearly followed in the advertising of current enhancements like cosmetic surgery and pharmaceutical enhancements, where descriptions, images and testimonials emphasize the unhappiness and inadequacy of people prior to surgery or drug use.³²

Depictions of normal traits as inferior may even get a (pseudo)scientific basis through *medicalization*, which is the characterization of human traits in terms of disease and ailment. When normal human traits can be enhanced, their unenhanced counterparts may be redefined as abnormal or inadequate through market-driven medicalizations. This already happens in cosmetic surgery, in which the human body is measured up to an unrealistic ideal of beauty and perfection. Relative to this ideal, “corrections” are performed and “deformities” removed, and flat-chested women are called “micromastic”. The same tendency is visible in the market of mood enhancers, where normal feelings of unhappiness and anxiety are defined as abnormal and become treatable conditions.³³ A medicalized attitude towards normal human traits is also visible in transhumanism, in

which unenhanced human beings are seen as limited and defective. As Nick Bostrom has put it, “Transhumanists view human nature as a work-in-progress, a half-baked beginning that we can learn to remold in desirable ways.”³⁴

Human enhancement, to conclude, is likely to commodify human traits, and may in the process end up redefining the enhanced as normal and the unenhanced as abnormal. Human traits, as represented in the self-concept, will be reconceptualized as social goods that have a monetary value and that can be acquired to mark social and economic status. Unenhanced human beings may come to see themselves as incomplete and inferior in comparison to new norms of normality, and their self-esteem is likely to suffer as a result.

6. Superhuman Traits, Species Membership and New Social Identities

While some enhancement may become standard in society, causing human beings without the enhancement to be seen as “abnormal”, other enhancements will remain exceptional. In such cases, it is enhanced persons who are at risk of being perceived as abnormal. Persons are seen as abnormal, in the sense of “deviating from the norm” when they have traits beyond the normal human range or when they look different due to the presence of visible prostheses, discolorations or deformities of the body. These deviations from the norm, and the social categories and judgments of which others avail themselves to underline them, will be reflected in the self-concept, and will affect self-esteem.

Effects on self-esteem can be positive or negative. Positive effects result when enhancements are recognized to provide superior powers or enhance one’s status. Negative effects result from negative appraisals by others. People with enhancements

may be categorized pejoratively as “deviants,” “freaks,” “monsters,” or “mutants”. The history of fiction is replete with quasi-human beings, from Frankenstein’s monster to X-Men, that, because of their deviant features, do not fit in and become outcasts. The deviance from normality of the superabled, their otherness, combined with their minority status, may limit their social acceptance and consequently lower their self-esteem.

Human beings with only a few superhuman qualities will still be seen as human beings. More radical forms of enhancements, however, may yield beings that are not fully recognized as members of the human race. Human-animal chimeras, for example, will be classified somewhere between human and animal. Since animals are placed lower in the natural order than human beings, such organisms will likely be seen as inferior to human beings, in spite of possible enhanced powers like better smell or greater strength. They may consequently not be granted full personhood.³⁵ Advanced cyborgs, in which important organ functions are taken over by prostheses, especially brain functions, are also likely to be seen as not fully human. Since machines are also placed lower in the natural order than human beings, there is a serious risk that such beings will be held to be inferior to normal humans.

The perception of (super)enhanced humans as different may create new social statuses and identities for them. New social categories may be created to refer to different classes of cyborgs, chimeras, superenhanced humans and designer babies, with corresponding expectations and prejudices about their moral status and their role in society. These social prejudices may become reflected in laws and policies, and will also be reflected in the self-concept of the enhanced. The consequences for self-esteem are difficult to predict, as self-esteem may both increase and decrease as a result of new

social identities. There is a serious risk, however, that the enhanced will not be seen by themselves and others as equal to the unenhanced, but as either superior or inferior to them.

7. Conclusion: Ethical Considerations

Human enhancement is likely to have serious implications for personal identity. Such implications are especially likely for enhancements of mood and personality, enhancements that add superhuman traits or cross species boundaries, enhancements that change visual appearance beyond what is considered normal, and enhancements chosen by parents or others before birth or in early childhood. But what are the moral implications of changes in personal identity resulting from enhancement? Do some of these changes violate moral principles?

It would clearly be a moral wrong if human enhancement would create divisions between identities that would systematically cause certain classes of humans or humanoid organisms in society to be recognized as having inferior status. In the preceding discussion, several scenarios were presented in which this would happen. The enhanced may acquire an inferior status through their otherness, and by not being seen as fully human. The unenhanced may gain an inferior status when certain enhancements become normal. Feelings of inferiority and low self-esteem may also result from perceptions that one's actions are not wholly free because determined by personality characteristics that were engineered by others, and because one's achievements are not seen as resulting from one's own effort.

Negative implications of enhancement for self-esteem are morally significant because self-esteem has been argued in moral philosophy to be a *primary good*.³⁶ Primary goods are things that people need to function as free and equal persons in society, and that are necessary for them to achieve their goals in life. As John Rawls has argued, it is the responsibility of society to provide a social basis for the development of self-esteem. This requires there to be a public affirmation of the status of equal citizenship, including equal rights and an equal moral worth. Human enhancement could undermine such public affirmations by increasing differences between people and by engineering superhuman or transhuman beings that may not be recognized to have normal personhood.

As transhumanists and other defenders of human enhancement have emphasized, such negative implications are not necessary. They will depend on how society conceives of enhanced human beings, and, they argue, there is no reason why we should not see them as equals.³⁷ While this may be true in principle, there is no guarantee whatsoever that this is how things will also work out in practice. True, there is a strong belief in the moral equality of all rational beings in contemporary (Western) societies, implying that all rational beings have equal moral status and dignity and deserve equal treatment and respect. This belief is a core tenet of the Enlightenment ideals that have shaped Western societies, and is a cornerstone of both Christianity, Islam and Judaism.

However, the history of the human race shows that this existing moral code is often broken in practice, and that observable differences between people tend to lead to moral and social inequalities, whether they are differences in race, gender, ethnicity, religion, sexual orientation, or ability. Even though such inequalities may have decreased

over time, the idea that not all human beings are equal still lingers in individual attitudes, whether in the form of (latent) racism, sexism, or similar discriminatory attitudes, and can under the right circumstances lead to overt discrimination.

Not only does a similar risk to unequal treatment emerge when a class of transhuman or posthuman beings is created, there is an even greater risk, which is that the very basis of the modern notion of moral equality is undermined. This notion rests on the idea that there is an identifiable class of rational beings, called humans, that should be considered morally equal, either because they are inherently morally equal (by natural law or by divine order) or because they have agreed to a social contract in which they are declared morally equal. However, if a new class of rational (or subrational or superrational) beings emerges that transcends human nature, the notion of inherent moral equality does not seem to apply, because such a class is not fully human, and any notion of a social contract may not apply either, because that social contract was agreed to between humans. It is likely, therefore, that human enhancement will lead to new, unjustified inequalities, and may even undermine the core Western notion of moral equality. This gives us a reason, then, for being cautious about the application of HETs.

Even if new inequalities could somehow be prevented, which seems unlikely, the question would remain if human enhancement would really improve human lives. It might do so by enhancing our potential and by improving our self-image so as to make us feel better about ourselves. These positive changes may well occur, but possibly harmful effects have also been observed. Notably, it has been argued that human enhancement may bring about a devaluation of achievement through the disposability of effort and may further commodify the human body. In addition, for many traits their large-scale

enhancement in human populations may not end up giving humans an advantage. Many traits deliver *positional goods*: goods of which the value is not absolute but determined by the extent to which others lack the same good. If everyone becomes taller or faster through enhancement, then the relative social value of these traits remains the same, because one is only tall or fast relative to others.

Because the impact of human enhancement on personal identity is hence an issue of major social and ethical importance, this impact should be high on the agenda in both medical research and healthcare policy. In medical research and development, a thorough consideration of the potential implications of particular HETs for personal identity is therefore a necessity. These implications can be anticipated to some extent through serious engagement with existing research on personal identity and through extensive trials. In health policy, technology assessment and scenario building for new HETs should take place to anticipate possible social effects, and human enhancement should be carefully regulated based on the outcomes of such assessments. As I have tried to argue, failure to take these implications for personal identity seriously in the development and regulation of HETs is likely to engender an introduction of new inequalities into society and to enable the development of HETs that end up harming rather than improving the quality of life.

Notes

¹ Naam R. *More Than Human : Embracing the Promise of Biological Enhancement*. Joseph Henry Press, 2004; Wilsson J, Miller P, eds. *Better Humans: The Politics of Human Enhancement and Life Extension*. Demos, 2006; Garreau J. *Radical Evolution : The Promise and Peril of Enhancing Our Minds, Our Bodies -- and What It Means to Be Human*. Doubleday, 2005; Parens E, ed. *Enhancing*

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 - ³ Fukuyama F. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. Farrar, Straus and Giroux, 2002; Kass, L. *Life, Liberty and the Defense of Dignity: The Challenge for Bioethics*. Encounter Books, 2002.
 - ⁴ DeGrazia D. Enhancement Technologies and Human Identity. *Journal of Medicine and Philosophy* 2005, 30: 261-283; Hogle L. Enhancement Technologies and the Body. *Annual Review of Anthropology* 2005, 34: 695-716.
 - ⁵ In philosophy, personal identity is often defined as a set of criteria that must be fulfilled for persons to persist from one time to another. This diachronic conception of identity is not the one discussed in this paper. Rather, this paper focuses on the synchronic conception of identity as uniqueness in relation to others, the conception that is prevalent in social science. See DeGrazia, 2005, note 4.
 - ⁶ This distinction may not be valid for traits that seem to be both bodily and mental (e.g., sexual functioning).
 - ⁷ For a somewhat different typology, see Baylis F., Robert J. *The Inevitability of Genetic Enhancement Technologies*. *Bioethics* 2004, 18(1): 1-26.
 - ⁸ In psychology, *personality* is a collection of emotional, thought and behavioral patterns that are unique to a person and relatively consistent over time.
 - ⁹ There are also enhancements that do not fit in any of these three categories, including nonprosthetic surgery, as in certain types of cosmetic surgery, and procedures that modify human traits through nonsurgical, nongenetic and nonchemical means, as in neurofeedback, which makes use of sounds or visual stimuli. These are rather marginal cases, however.
 - ¹⁰ Brey P. Prosthetics. In: Mitcham C, ed. *MacMillan Encyclopedia of Science, Technology and Ethics*. MacMillan Press, 2005: 1527-1532.
 - ¹¹ Stock G, Campbell J, eds. *Engineering the Human Germline : An Exploration of the Science and Ethics of Altering the Genes We Pass to Our Children*. Oxford University Press, 2000; Stock G. *Redesigning Humans: Our Inevitable Genetic Future*. Houghton Mifflin, 2002.
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 - ¹³ Although this is the more common interpretation of the term 'identity,' philosophical discussions of personal identity often employ a different interpretation, focusing on the problem of personal identity over time. This problem is what metaphysical conditions determine when two persons at different points in time can be identified as being the same person. This notion of identity is not at issue in this essay.
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 - ¹⁷ See note 16, Lewis M, Brooks-Gunn J, 1979.
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 - ²² Taylor C. *Sources of the Self: The Making of the Modern Identity*. Cambridge: Cambridge University Press, 1989.
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- ²⁴ Tajfel H, 1982, note 19.
- ²⁵ Giddens A. *Modernity and Self-Identity. Self and Society in the Late Modern Age*. Cambridge: Polity Press, 1991.
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- ²⁷ Cf. Habermas J. *The Future of Human Nature*. Polity Press, 2004.
- ²⁸ Sandel M. What's Wrong with Enhancement. Paper prepared for the President's Council on Bioethics, Washington, D.C., 2002. Retrieved at <http://www.bioethics.gov/background/sandelpaper.html>.
- ²⁹ Slater D. *Consumer Culture and Modernity*. Polity Press, 1997.
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